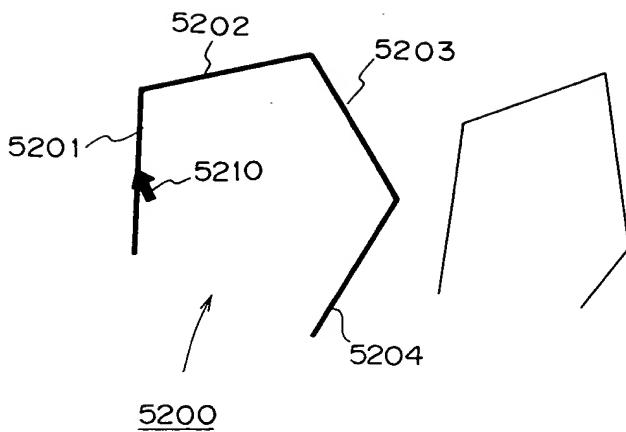


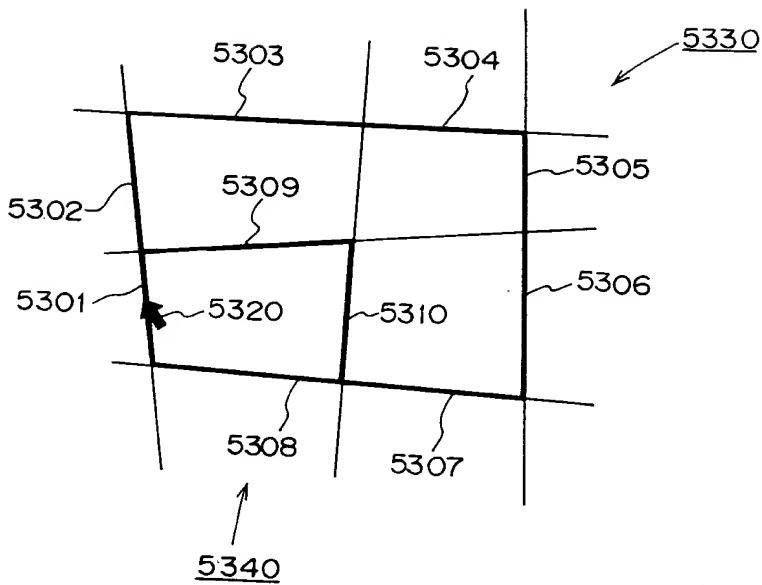
PRIOR ART

FIG. 1



PRIOR ART

FIG. 2



PRIOR ART

FIG. 3

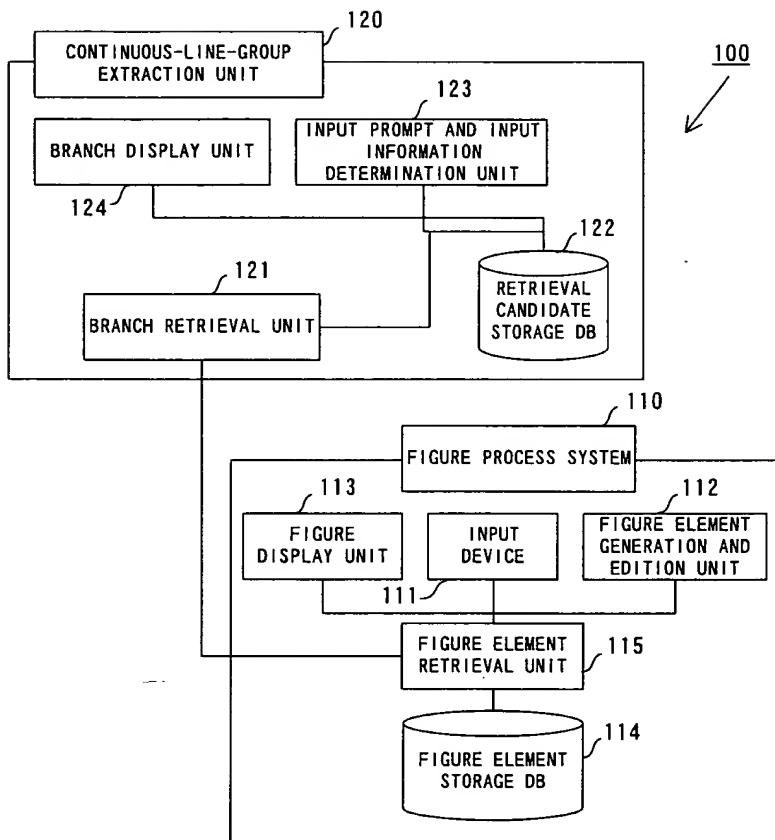


FIG. 4

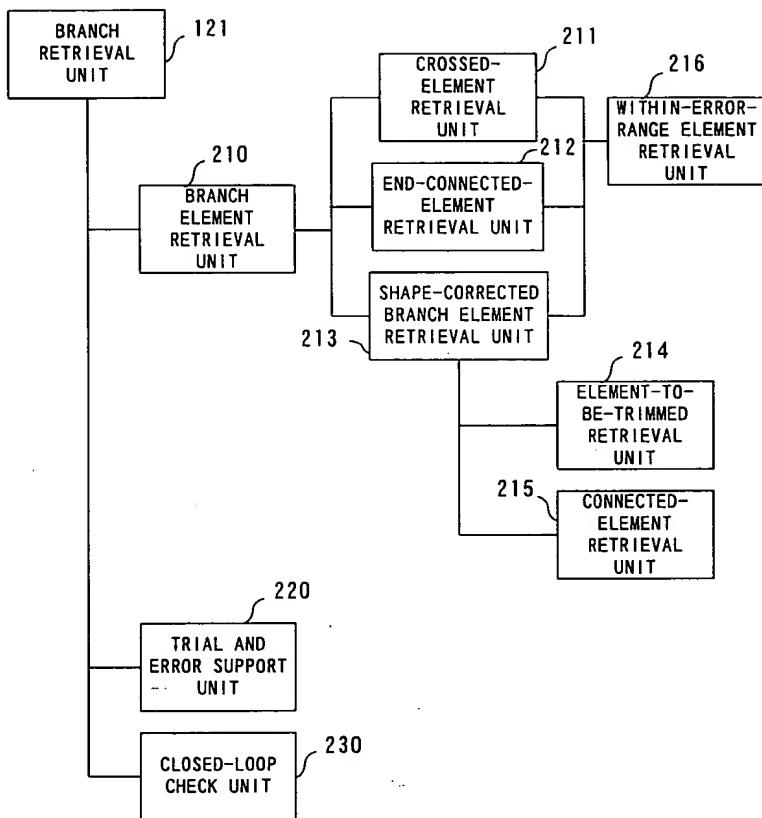


FIG. 5

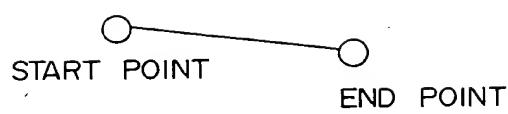


FIG. 6



FIGURE ELEMENTS ARE  
CONNECTED AT THE ENDS  
IN THE CASE WHERE  
INTERSECTION IS AT THE  
ENDS OF THE RESPECTIVE  
ELEMENTS, UNDER THE  
END-CONNECTED STATE AS  
SHOWN IN FIG. 8

FIG. 7

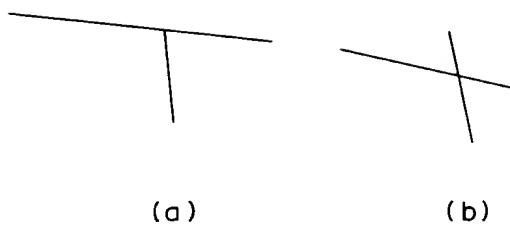


FIGURE ELEMENTS WITH  
AN INTERSECTION

FIG. 8



FIGURE ELEMENTS WITH  
TWO INTERSECTIONS

FIG. 9

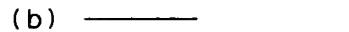
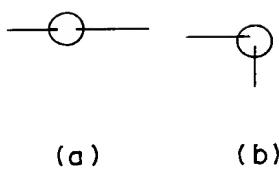
(a)   
(b) 

FIGURE ELEMENTS WHICH ARE  
ON THE SAME STRAIGHT LINE  
(CURVED LINE) AND DO NOT  
CROSS

FIGURE ELEMENTS THAT INTERSECT  
WHEN EXTENDED

FIG. 10



○ : SIZE OF A PREDETERMINED  
ERROR, FOR EXAMPLE, ABOUT  
 $10^{-3}$

FIG. 11

NUMBER OF REGISTERED ELEMENTS = N	
1	FIGURE ELEMENT ID
2	FIGURE ELEMENT ID
3	FIGURE ELEMENT ID
.	
.	
.	
N	FIGURE ELEMENT ID

TABLE 1

F I G. 12

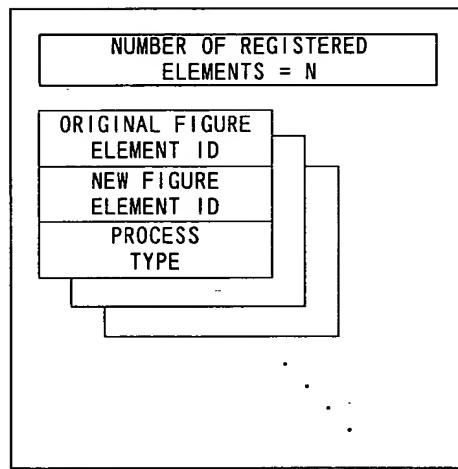


TABLE 2

FIG. 13

FIGURE ELEMENT ID
REFERENCE POINT COORDINATE VALUE

TABLE 3

F I G. 14

DIRECTION (POSITIVE/NEGATIVE)
-------------------------------

TABLE 4

F I G. 15

NUMBER OF CROSSED ELEMENTS = N	
1	CROSSED FIGURE ELEMENT ID
2	CROSSED FIGURE ELEMENT ID
3	CROSSED FIGURE ELEMENT ID
	⋮
N	CROSSED FIGURE ELEMENT ID

TABLE 5

F I G. 16

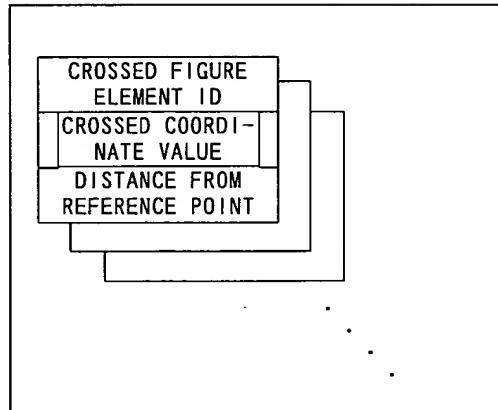
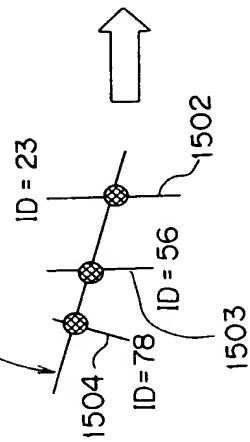


TABLE 6

F I G. 17

OBJECT ELEMENT 1501



• NUMBER OF CROSSED ELEMENTS  
= 3

• CROSSED FIGURE ELEMENT IDs  
= 23, 56, 78

FIG. 18

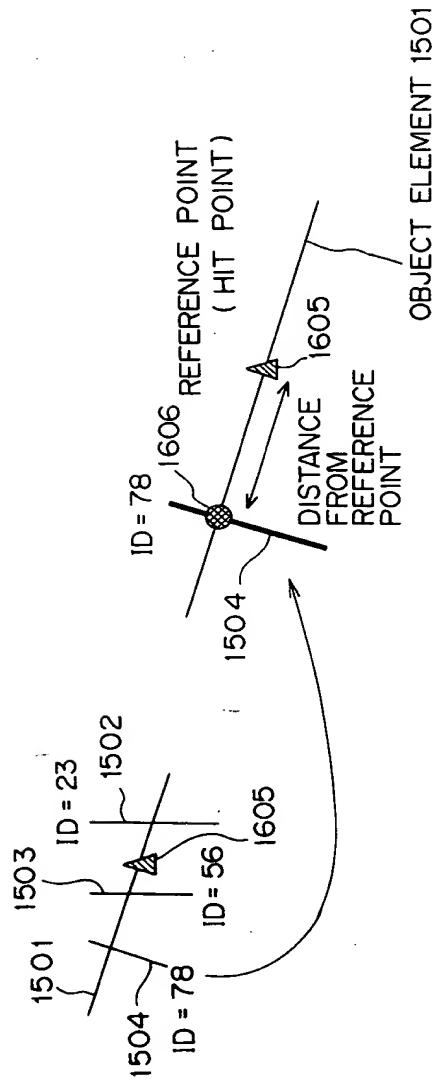
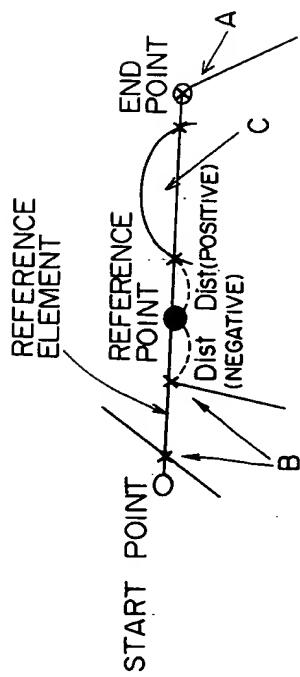
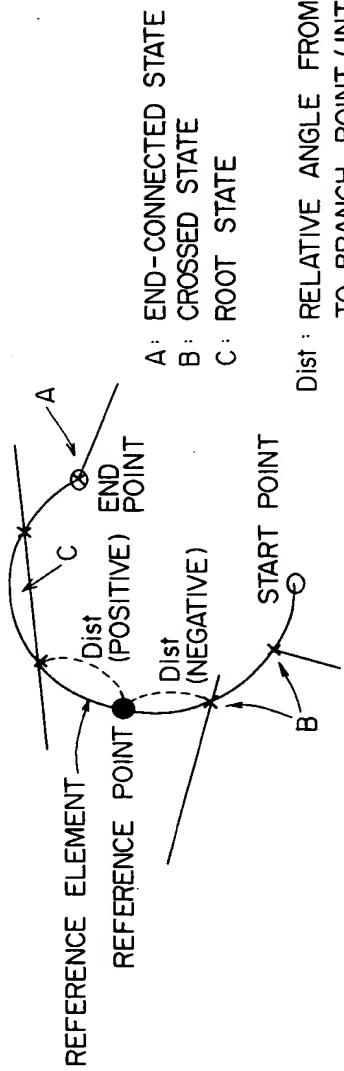


FIG. 19



REFERENCE ELEMENT  
 START POINT  
 REFERENCE POINT  
 END POINT  
 A : END-CONNECTED STATE  
 B : CROSSED STATE  
 C : ROOT STATE  
 Dist : DISTANCE BETWEEN REFERENCE POINT AND BRANCH POINT  
 (INTERSECTION) : DIRECTION FROM REFERENCE POINT TO START SIDE IS NEGATIVE DIRECTION AND DIRECTION FROM REFERENCE POINT TO END SIDE IS POSITIVE DIRECTION

FIG. 20



Dist : RELATIVE ANGLE FROM REFERENCE POINT TO BRANCH POINT (INTERSECTION) ;  
 ANGLE FROM REFERENCE POINT TO START POINT SIDE (CLOCKWISE) IS NEGATIVE ,  
 AND ANGLE FROM REFERENCE POINT TO END POINT SIDE (COUNTERCLOCKWISE) IS  
 POSITIVE

FIG. 21

GENERATION	
NUMBER OF BRANCHES = N	
1	BRANCH ID
2	BRANCH ID
3	BRANCH ID
.	
N	BRANCH ID

TABLE 7

F I G. 22

BRANCH ID			
NUMBER OF ARRANGEMENT FIGURE ELEMENTS			
HEAD FIGURE ELEMENT ID			
<table border="1"><tr><td>ORIGINAL FIGURE ELEMENT ID</td></tr><tr><td>INTERSECTION COORDINATE FIGURE</td></tr><tr><td>NEW FIGURE ELEMENT ID</td></tr></table>	ORIGINAL FIGURE ELEMENT ID	INTERSECTION COORDINATE FIGURE	NEW FIGURE ELEMENT ID
ORIGINAL FIGURE ELEMENT ID			
INTERSECTION COORDINATE FIGURE			
NEW FIGURE ELEMENT ID			

TABLE 8

F I G. 23

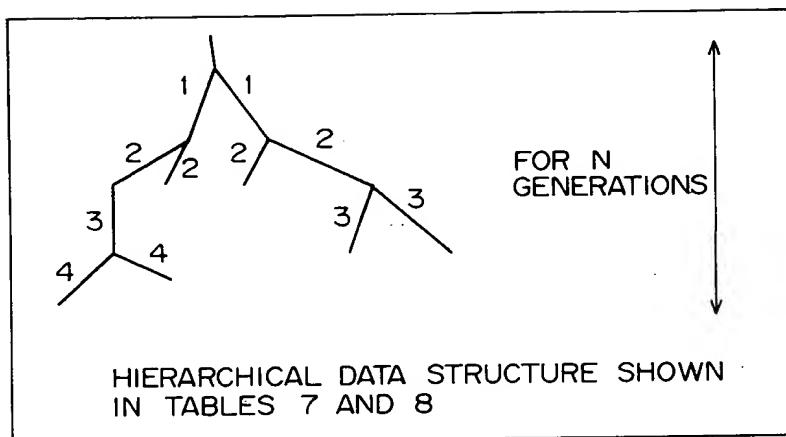


FIG. 24

HEAD END-CONNECTED FIGURE	
ELEMENT ID	
NUMBER OF END-CONNECTED BRANCHES = N	
1	BRANCH ID
2	BRANCH ID
3	BRANCH ID
⋮	
N	BRANCH ID

TABLE 9

F I G. 25

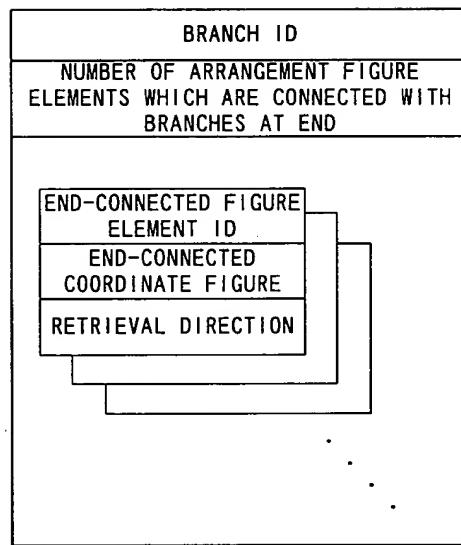


TABLE 10

F I G. 26

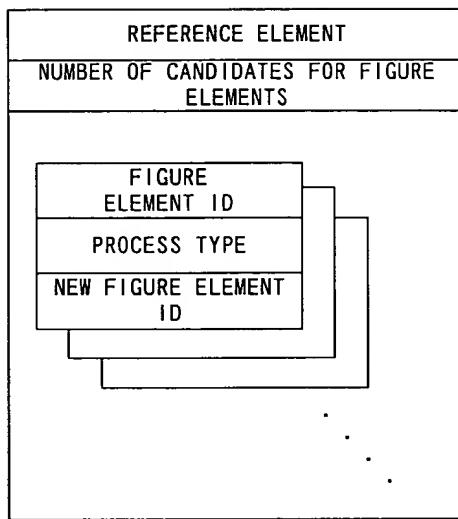


TABLE 11

F I G. 27

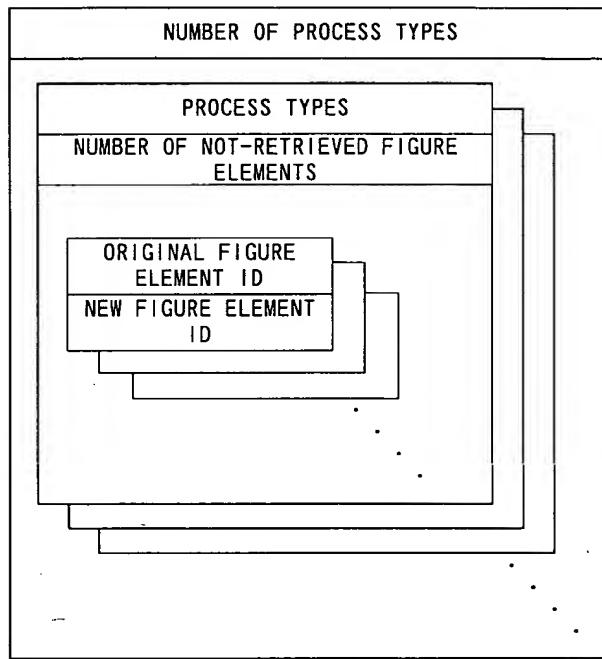


TABLE 12

F I G. 28

NUMBER OF SPECIFIED TYPES = N	
SPECIFIED RETRIEVAL TYPE	
SPECIFIED RETRIEVAL TYPE	
	⋮
SPECIFIED RETRIEVAL TYPE	

TABLE 13

F I G. 29

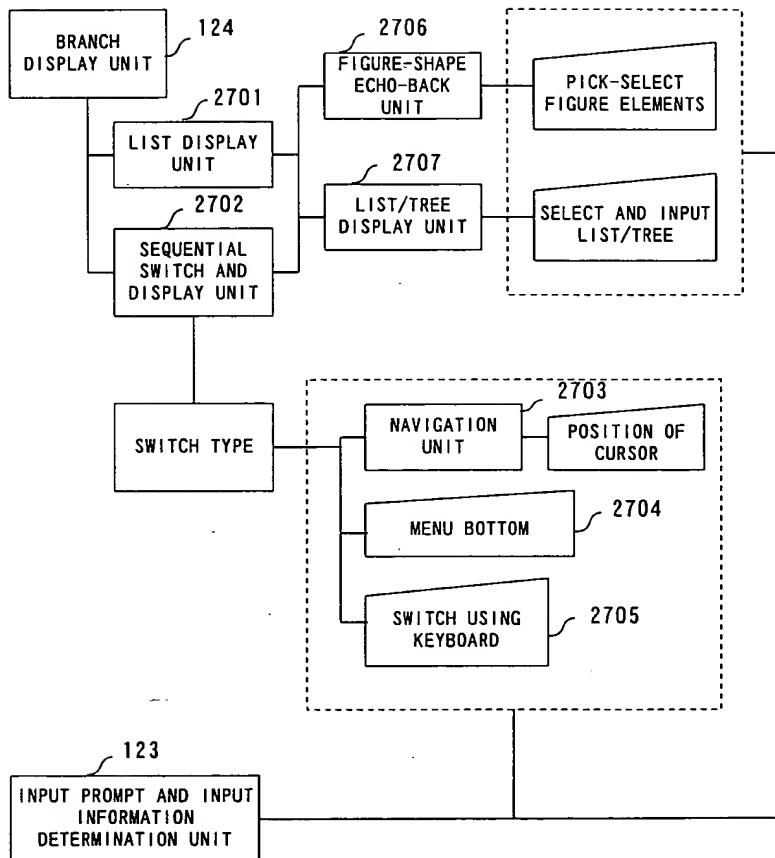


FIG. 30

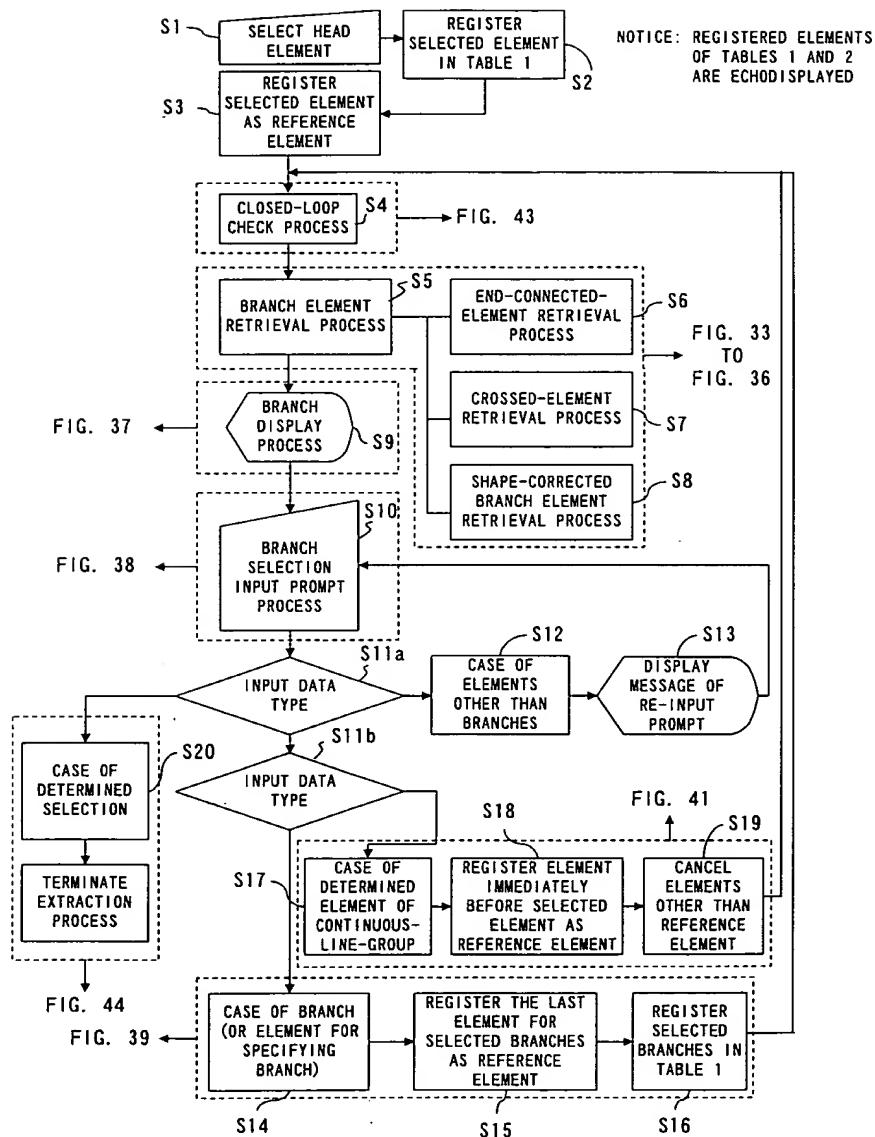
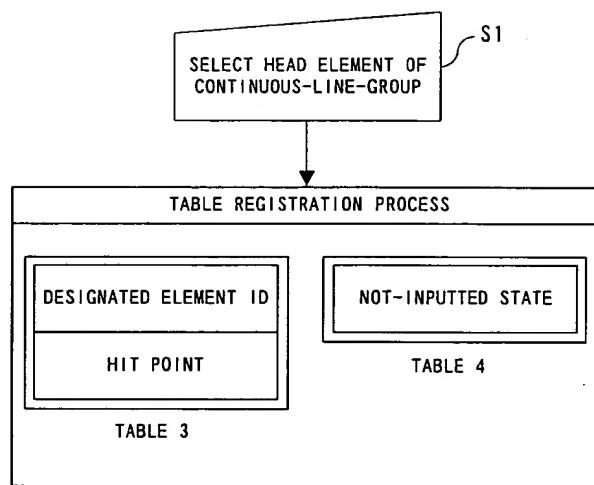
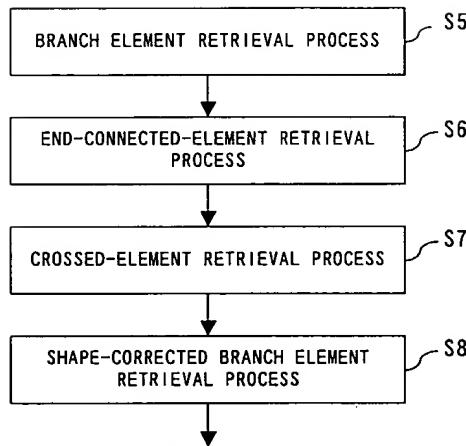


FIG. 31



F I G. 3 2



F I G. 33

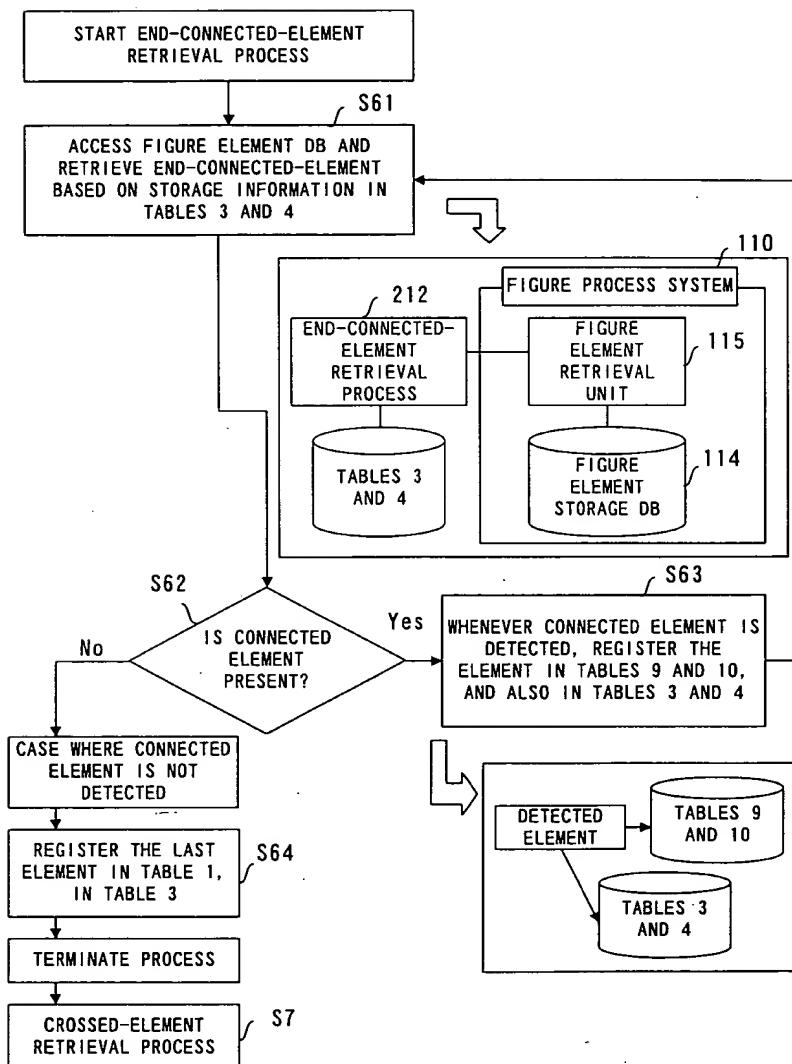


FIG. 34

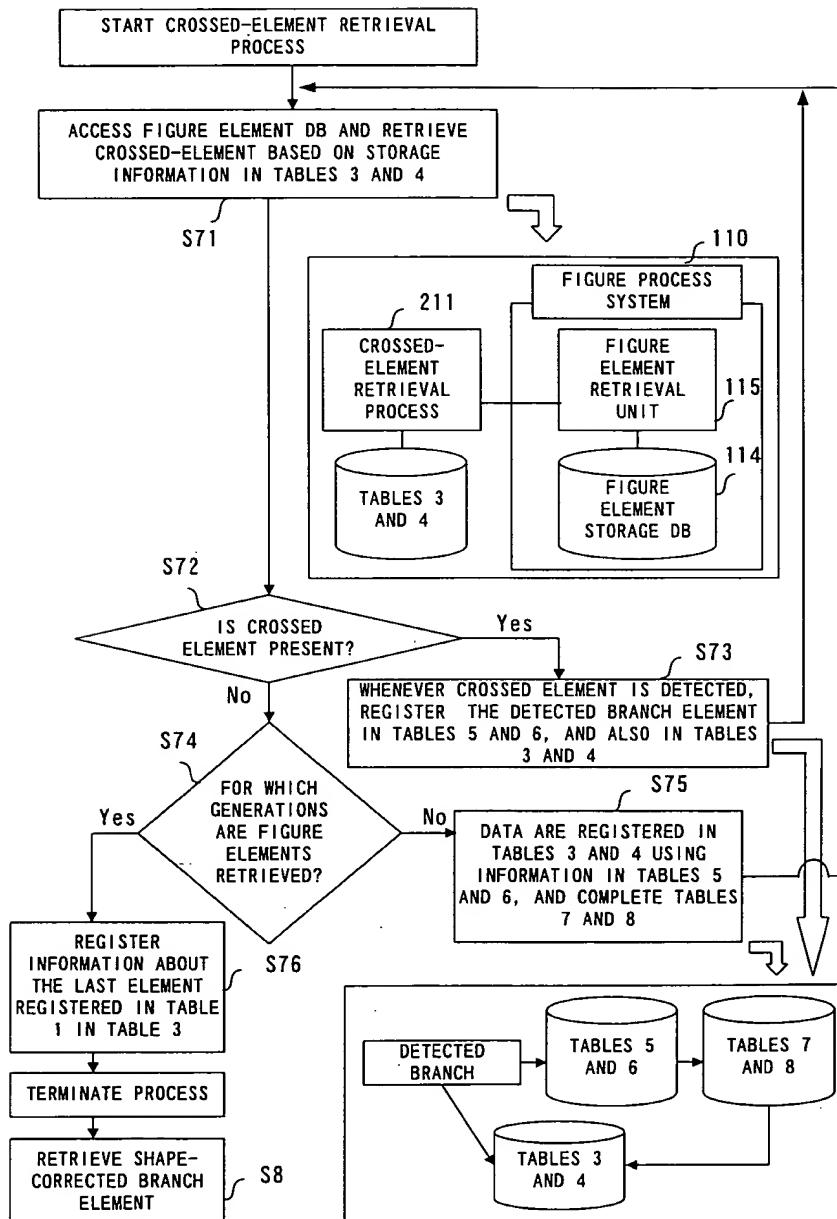
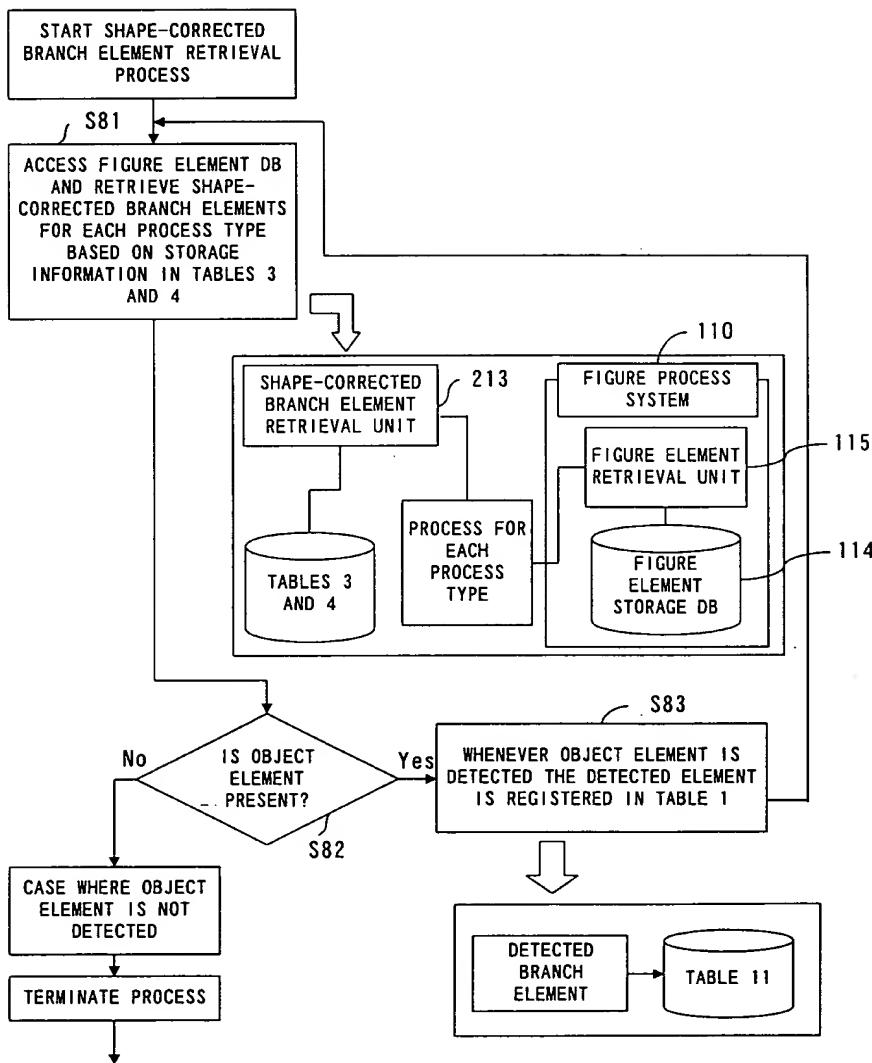
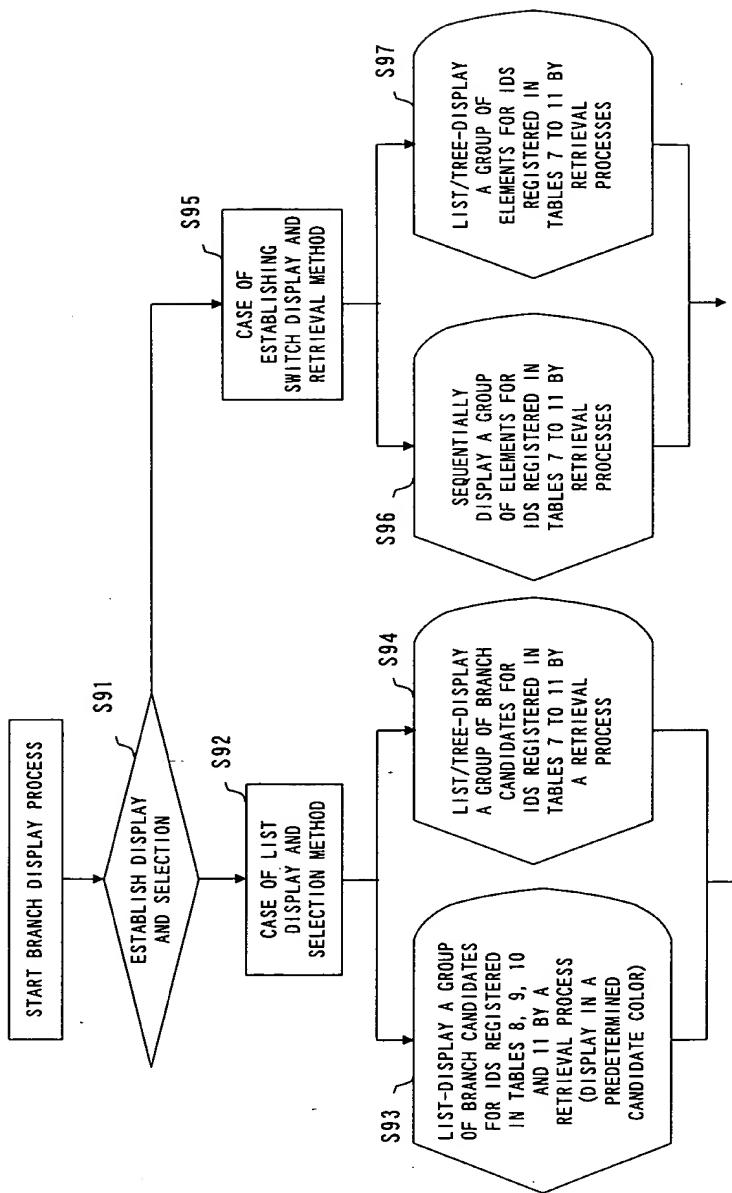


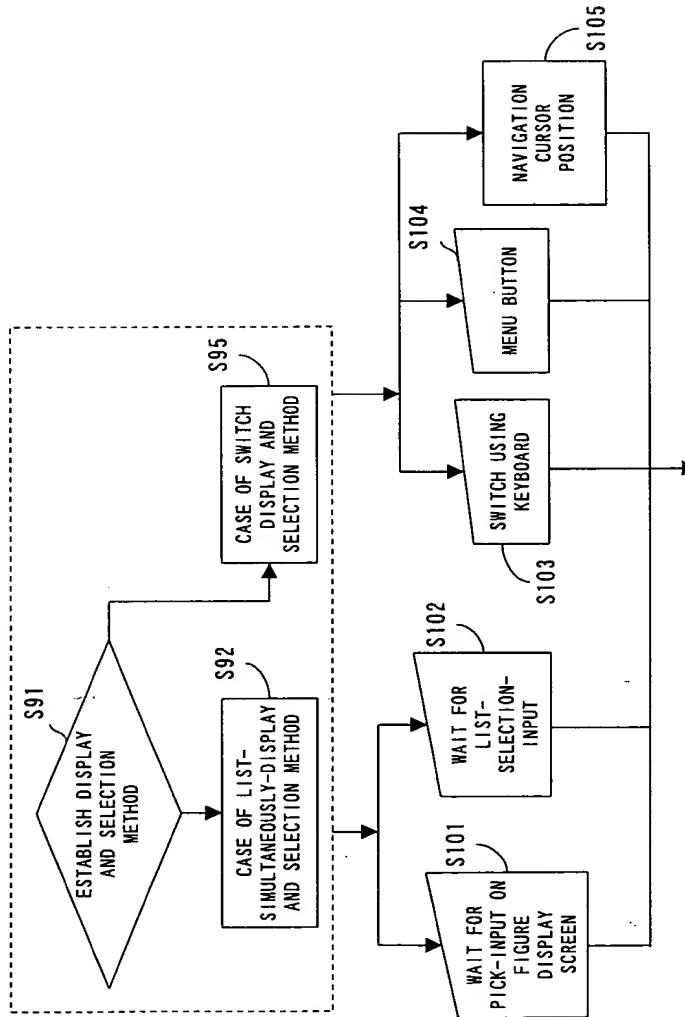
FIG. 35



F I G. 36



PROCESS WILL BE IN A STATE OF WAITING FOR:  
 (1) PICK-INPUT ON FIGURE DISPLAY SCREEN (SELECTING A FIGURE ELEMENT);  
 (2) LIST-SELECTION-INPUT (BRANCH ID);  
 (3) KEYBOARD-INPUT



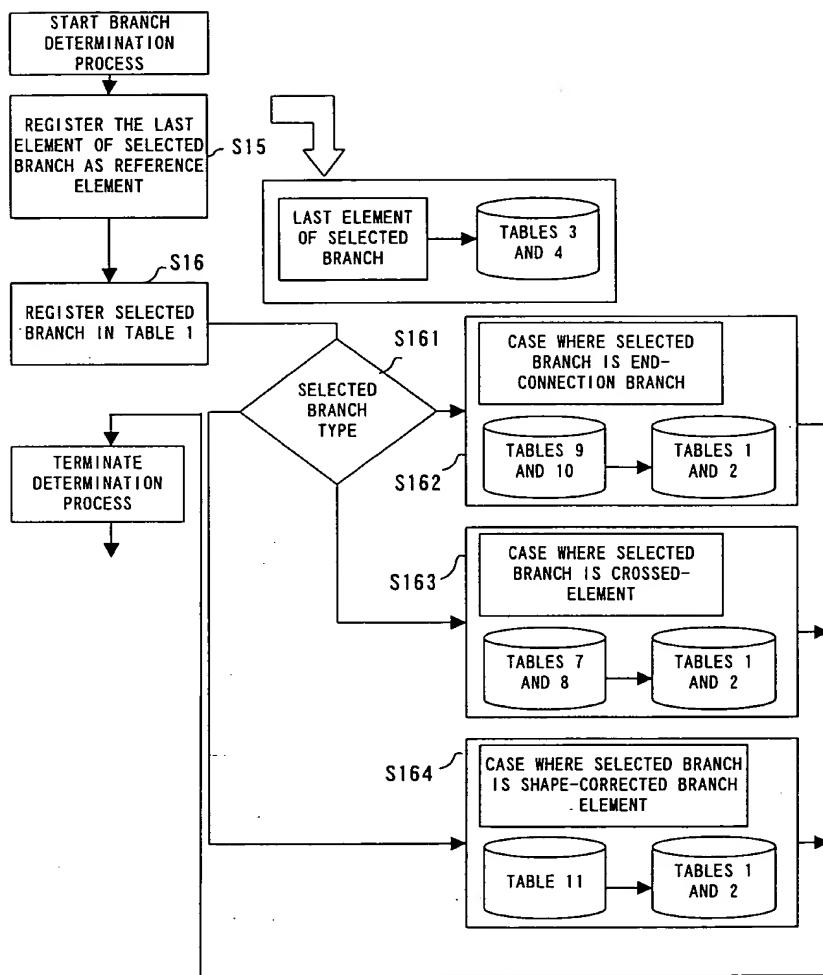
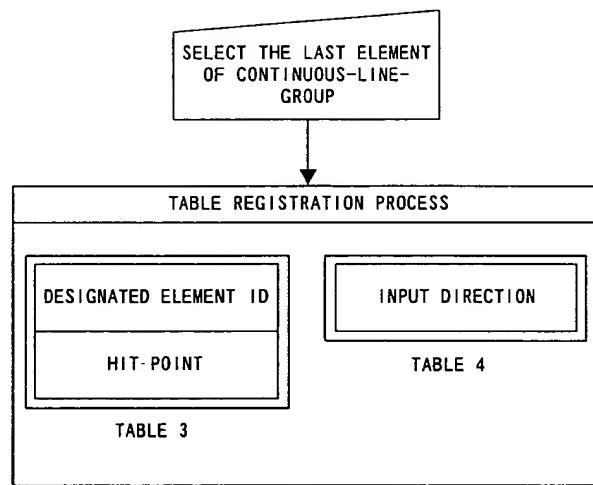


FIG. 39



F I G. 40

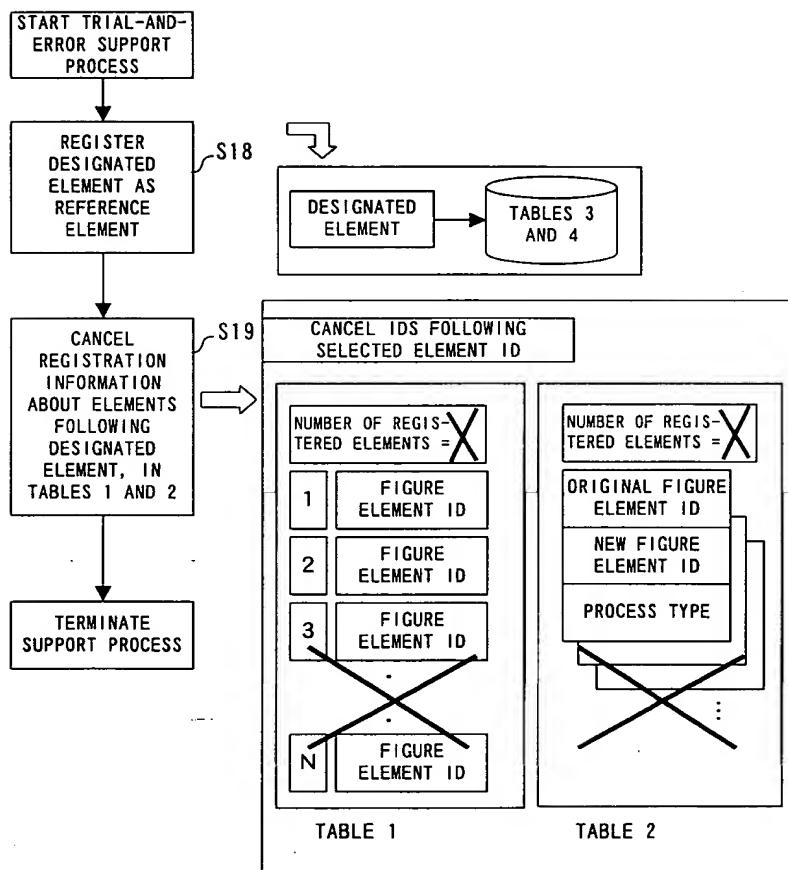
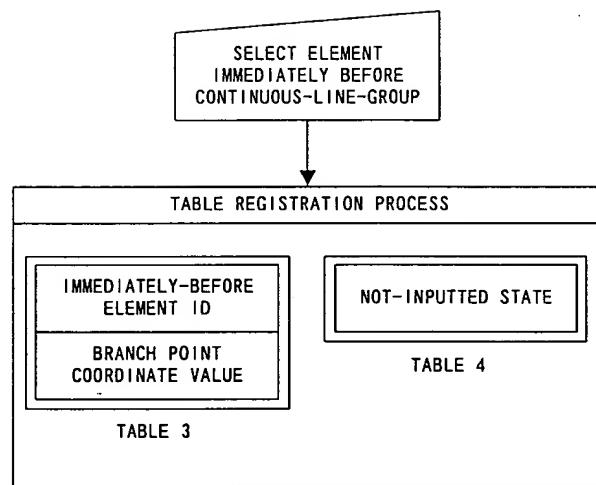


FIG. 41



F I G. 42

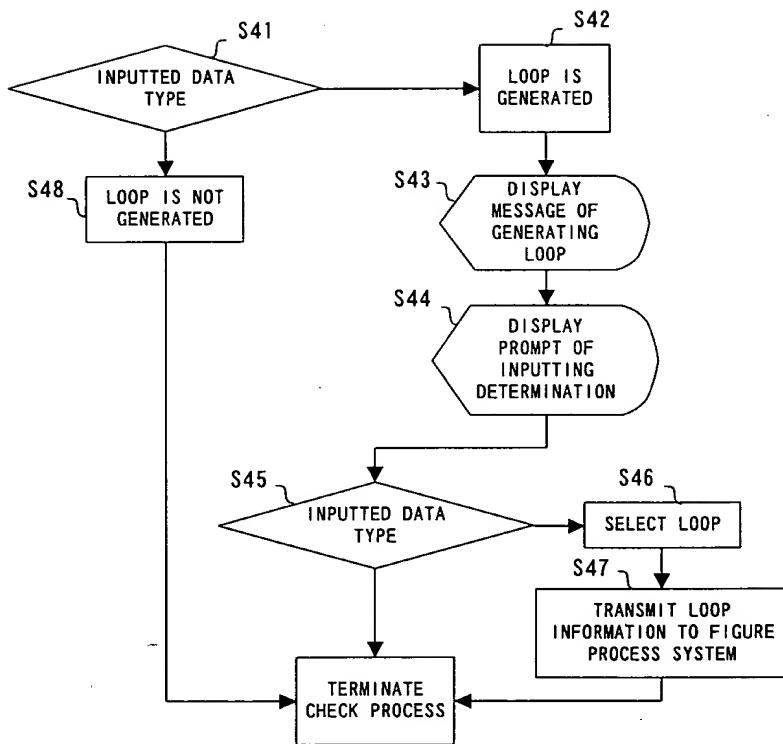
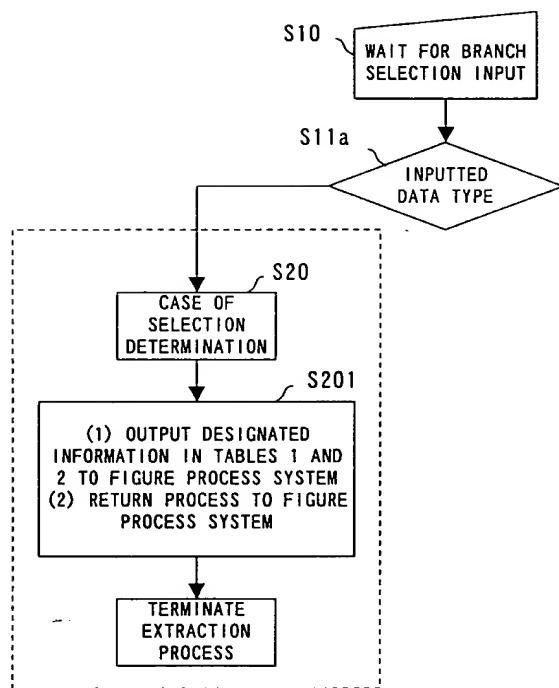


FIG. 43



F I G. 44

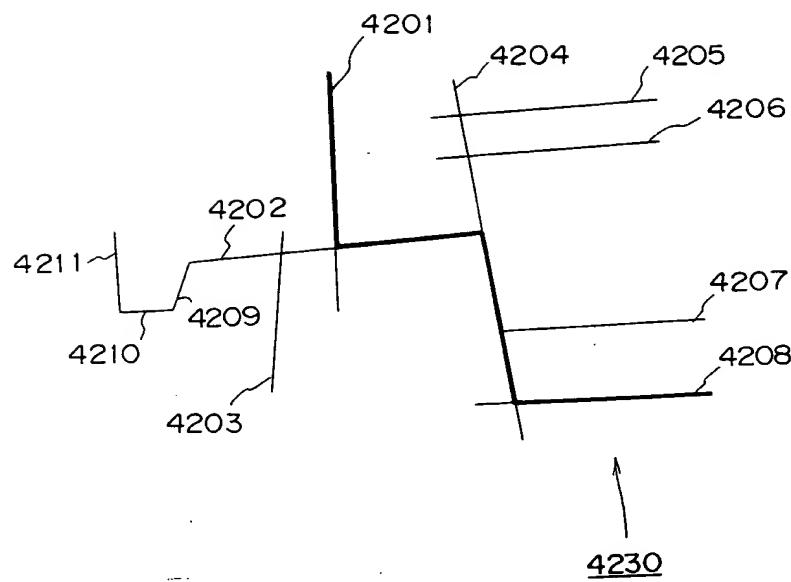


FIG. 45

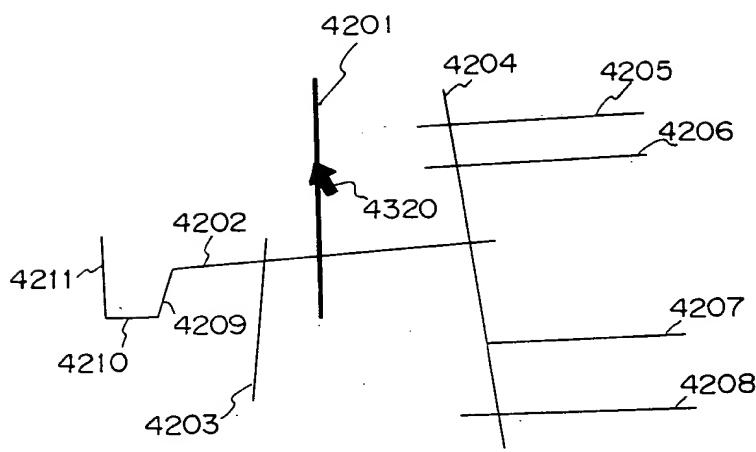


FIG. 46

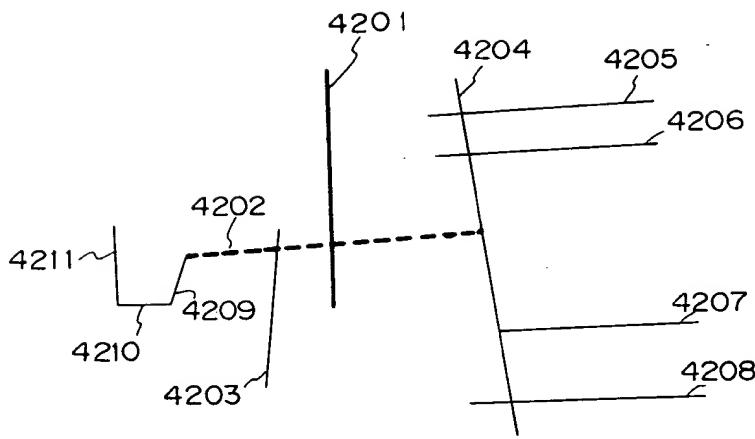


FIG. 47

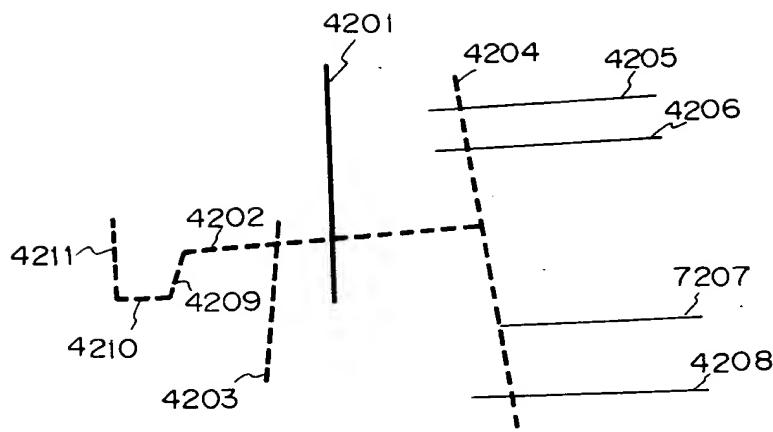


FIG. 48

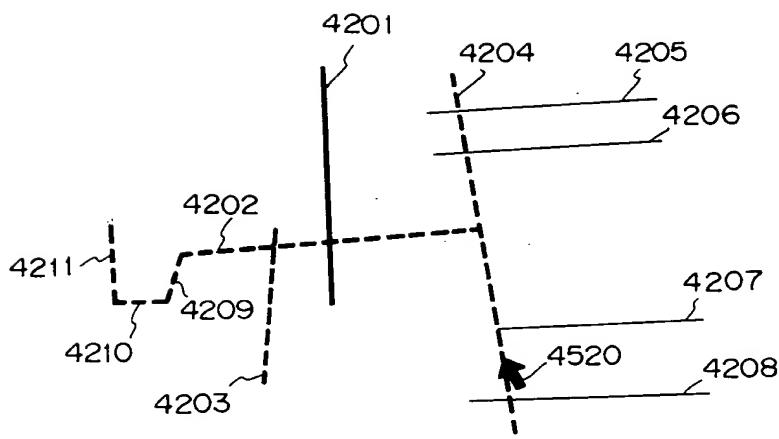


FIG. 49

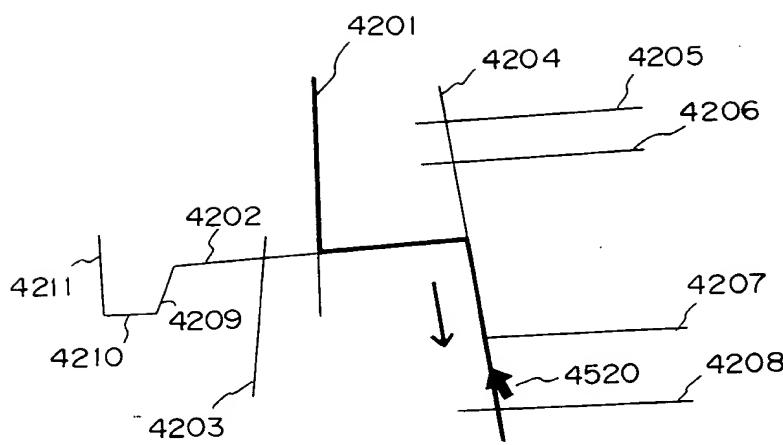


FIG. 50

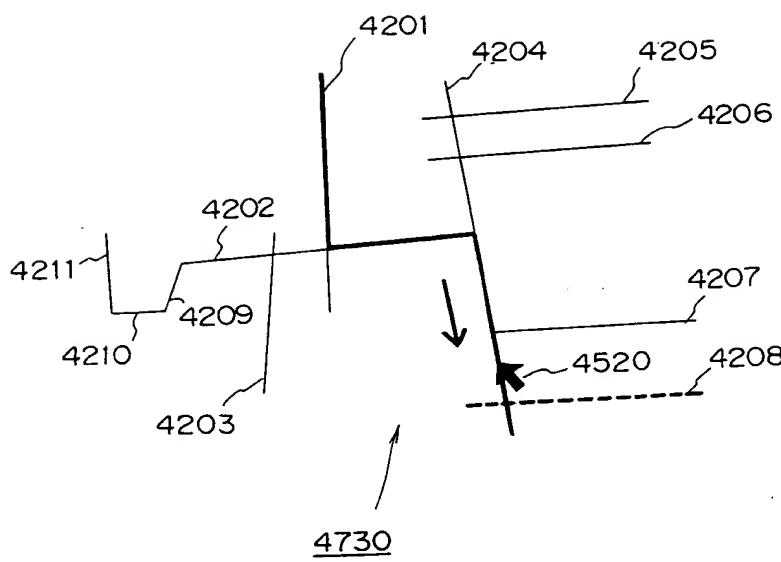


FIG. 51

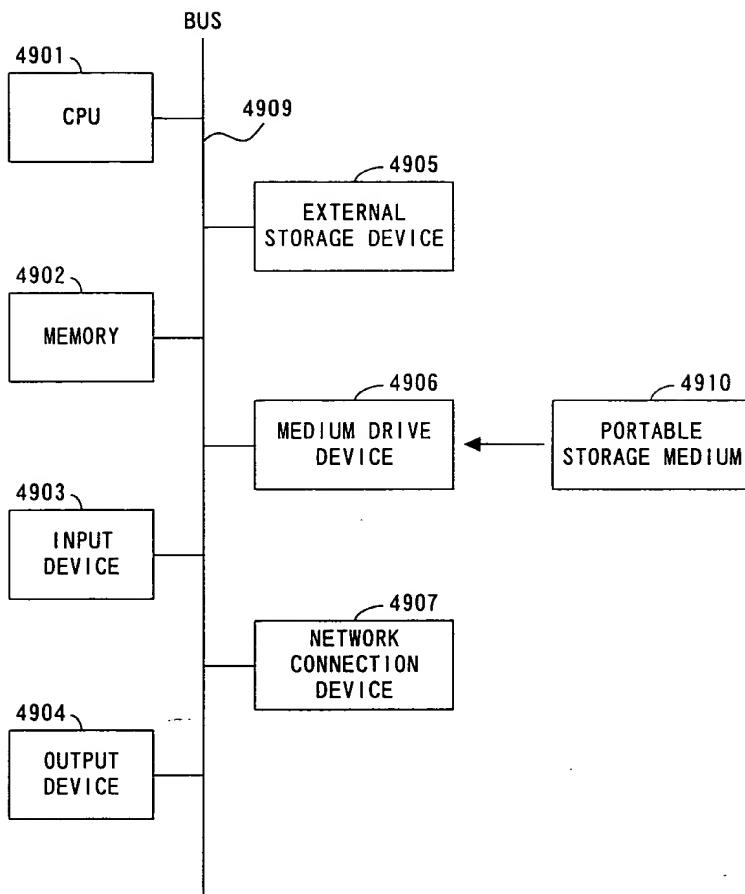
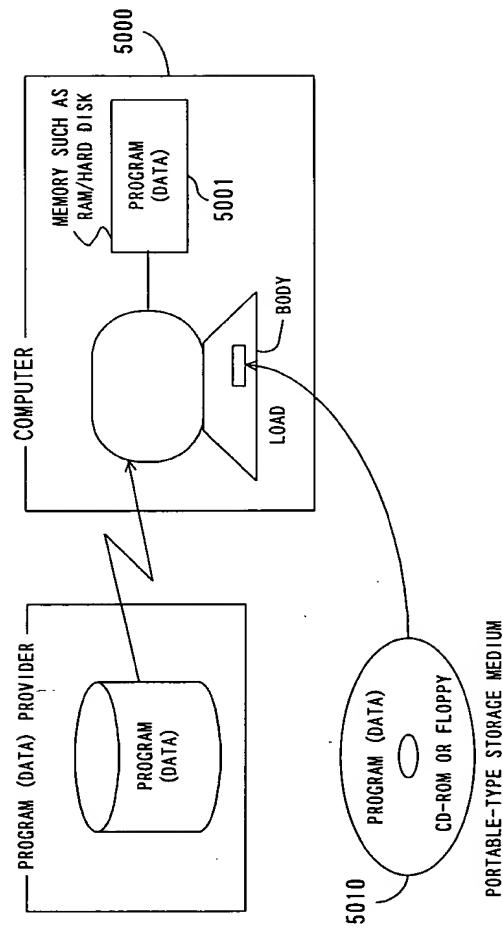


FIG. 52



F I G. 53